

## SEQUENCE LISTING

<110> Yamanouchi Pharmaceutical Co., Ltd.

<120> A novel potassium channel protein

<130> Y9903-PCT

<140>

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<150> JP P1998-011434

<151> 1998-01-23

<150> JP P1998-346198

<151> 1998-12-04

<160> 12

<170> PatentIn Ver. 2.0

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<211> 3323

<212> DNA

<213> Homo sapiens

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<221> CDS

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gac acc atc gct acg cgc ttc gac ggc acg cac agt aac ttc gtg ctg 98

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ggc aac gcc cag gtg gcg ggg ctc ttc ccc gtg gtc tac tgc tct gat 146

Gly Asn Ala Gln Val Ala Gly Leu Phe Pro Val Val Tyr Cys Ser Asp

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ggc ttc tgt gac ctc acg ggc ttc tcc cgg gct gag gtc atg cag cgg 194

Gly Phe Cys Asp Leu Thr Gly Phe Ser Arg Ala Glu Val Met Gln Arg

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ggc tgt gcc tgc tcc ttc ctt tat ggg cca gac acc agt gag ctc gtc 242

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Arg Gln Gln Ile Arg Lys Ala Leu Asp Glu His Lys Glu Phe Lys Ala	
80 85 90 95	
gag ctg atc ctg tac cgg aag agc ggg ctc ccg ttc tgg tgt ctc ctg	338
Glu Leu Ile Leu Tyr Arg Lys Ser Gly Leu Pro Phe Trp Cys Leu Leu	
100 105 110	
gat gtg ata ccc ata aag aat gag aaa ggg gag gtg gct ctc ttc cta	386
Asp Val Ile Pro Ile Lys Asn Glu Lys Gly Glu Val Ala Leu Phe Leu	
115 120 125	
gtc tct cac aag gac atc agc gaa acc aag aac cga ggg ggc ccc gac	434
Val Ser His Lys Asp Ile Ser Glu Thr Lys Asn Arg Gly Gly Pro Asp	
130 135 140	
aga tgg aag gag aca ggt ggt ggc cgg cgc cga tat ggc cgg gca cga	482
Arg Trp Lys Glu Thr Gly Gly Gly Arg Arg Arg Tyr Gly Arg Ala Arg	
145 150 155	
tcc aaa ggc ttc aat gcc aac cgg cgg cgg agc cgg gcc gtg ctc tac	530
Ser Lys Gly Phe Asn Ala Asn Arg Arg Arg Ser Arg Ala Val Leu Tyr	
160 165 170 175	
cac ctg tcc ggg cac ctg cag aag cag ccc aag ggc aag cac aag ctc	578
His Leu Ser Gly His Leu Gln Lys Gln Pro Lys Gly Lys His Lys Leu	
180 185 190	
aat aag ggg gtg ttt ggg gag aaa cca aac ttg cct gag tac aaa gta	626
Asn Lys Gly Val Phe Gly Glu Lys Pro Asn Leu Pro Glu Tyr Lys Val	
195 200 205	
gcc gcc atc cgg aag tgc ccc ttc atc ctg ttg cac tgt ggg gca ctg	674
Ala Ala Ile Arg Lys Ser Pro Phe Ile Leu Leu His Cys Gly Ala Leu	
210 215 220	
aga gcc acc tgg gat ggc ttc atc ctg ctc gcc aca ctc tat gtg gct	722
Arg Ala Thr Trp Asp Gly Phe Ile Leu Leu Ala Thr Leu Tyr Val Ala	
225 230 235	
gtc act gtg ccc tac agc gtg tgt gtg agc aca gca cgg gag ccc agt	770
Val Thr Val Pro Tyr Ser Val Cys Val Ser Thr Ala Arg Glu Pro Ser	
240 245 250 255	
gcc gcc cgc ggc ccg ccc agc gtc tgt gac ctg gcc gtg gag gtc ctc	818

Ala Ala Arg Gly Pro Pro Ser Val Cys Asp Leu Ala Val Glu Val Leu  
260 265 270

ttc atc ctt gac att gtg ctg aat ttc cgt acc aca ttc gtg tcc aag 866  
Phe Ile Leu Asp Ile Val Leu Asn Phe Arg Thr Thr Phe Val Ser Lys  
275 280 285

tcg ggc cag gtg gtg ttt gcc cca aag tcc att tgc ctc cac tac gtc 914  
Ser Gly Gln Val Val Phe Ala Pro Lys Ser Ile Cys Leu His Tyr Val  
290 295 300

acc acc tgg ttc ctg ctg gat gtc atc gca gcg ctg ccc ttt gac ctg 962  
Thr Thr Trp Phe Leu Leu Asp Val Ile Ala Ala Leu Pro Phe Asp Leu  
305 310 315

cta cat gcc ttc aag gtc aac gtg tac ttc ggg gcc cat ctg ctg aag 1010  
Leu His Ala Phe Lys Val Asn Val Tyr Phe Gly Ala His Leu Leu Lys  
320 325 330 335

acg gtg cgc ctg ctg cgc ctg ctg cgc ctg ctt ccg cgg ctg gac cgg 1058  
Thr Val Arg Leu Leu Arg Leu Leu Arg Leu Leu Pro Arg Leu Asp Arg  
340 345 350

tac tcg cag tac agc gcc gtg gtg ctg aca ctg ctc atg gcc gtg ttc 1106  
Tyr Ser Gln Tyr Ser Ala Val Val Leu Thr Leu Leu Met Ala Val Phe  
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gcc ctg ctc gcg cac tgg gtc gcc tgc gtc tgg ttt tac att ggc cag 1154  
Ala Leu Leu Ala His Trp Val Ala Cys Val Trp Phe Tyr Ile Gly Gln  
370 375 380

cgg gag atc gag agc agc gaa tcc gag ctg cct gag att ggc tgg ctg 1202  
Arg Glu Ile Glu Ser Ser Glu Ser Glu Leu Pro Glu Ile Gly Trp Leu  
385 390 395

cag gag ctg gcc cgc cga ctg gag act ccc tac tac ctg gtg ggc cgg 1250  
Gln Glu Leu Ala Arg Arg Leu Glu Thr Pro Tyr Tyr Leu Val Gly Arg  
400 405 410 415

agg cca gct gga ggg aac agc tcc ggc cag agt gac aac tgc agc agc 1298  
Arg Pro Ala Gly Gly Asn Ser Ser Gly Gln Ser Asp Asn Cys Ser Ser  
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agc agc gag gcc aac ggg acg ggg ctg gag ctg ctg ggc ggc ccg tcg 1346  
Ser Ser Glu Ala Asn Gly Thr Gly Leu Glu Leu Leu Gly Gly Pro Ser  
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ctg cgc agc gcc tac atc acc tcc ctc tac ttc gca ctc agc agc ctc 1394

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acc agc gtg ggc ttc ggc aac gtg tcc gcc aac acg gac acc gag aag	1442
Thr Ser Val Gly Phe Gly Asn Val Ser Ala Asn Thr Asp Thr Glu Lys	
465	475
atc ttc tcc atc tgc acc atg ctc atc ggc gcc ctg atg cac gcg gtg	1490
Ile Phe Ser Ile Cys Thr Met Leu Ile Gly Ala Leu Met His Ala Val	
480	495
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Val Phe Gly Asn Val Thr Ala Ile Ile Gln Arg Met Tyr Ala Arg Arg	
500	510
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Phe Leu Tyr His Ser Arg Thr Arg Asp Leu Arg Asp Tyr Ile Arg Ile	
515	525
cac cgt atc ccc aag ccc ctc aag cag cgc atg ctg gag tac ttc cag	1634
His Arg Ile Pro Lys Pro Leu Lys Gln Arg Met Leu Glu Tyr Phe Gln	
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gcc acc tgg gcg gtg aac aat ggc atc gac acc acc gag ctg ctg cag	1682
Ala Thr Trp Ala Val Asn Asn Gly Ile Asp Thr Thr Glu Leu Leu Gln	
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agc ctc cct gac gag ctg cgc gca gac atc gcc atg cac ctg cac aag	1730
Ser Leu Pro Asp Glu Leu Arg Ala Asp Ile Ala Met His Leu His Lys	
560	575
gag gtc ctg cag ctg cca ctg ttt gag gcg gcc agc cgc ggc tgc ctg	1778
Glu Val Leu Gln Leu Pro Leu Phe Glu Ala Ala Ser Arg Gly Cys Leu	
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cgg gca ctg tct ctg gcc ctg cgg ccc gcc ttc tgc acg ccg ggc gag	1826
Arg Ala Leu Ser Leu Ala Leu Arg Pro Ala Phe Cys Thr Pro Gly Glu	
595	605
tac ctc atc cac caa ggc gat gcc ctg cag gcc ctc tac ttt gtc tgc	1874
Tyr Leu Ile His Gln Gly Asp Ala Leu Gln Ala Leu Tyr Phe Val Cys	
610	620
tct ggc tcc atg gag gtg ctc aag ggt ggc acc gtg ctc gcc atc cta	1922
Ser Gly Ser Met Glu Val Leu Lys Gly Gly Thr Val Leu Ala Ile Leu	
625	635
ggg aag ggc gac ctg atc ggc tgt gag ctg ccc cgg cgg gag cag gtg	1970



Cys Gly Ser Asp Gln Pro Lys Phe Ser Phe Arg Val Gly Gln Ser Gly	
835	840 845
ccg gaa tgt agc agc agc ccc tcc cct gga cca gag agc ggc ctg ctc	2594
Pro Glu Cys Ser Ser Ser Pro Ser Pro Gly Pro Glu Ser Gly Leu Leu	
850	855 860
act gtt ccc cat ggg ccc agc gag gca agg aac aca gac aca ctg gac	2642
Thr Val Pro His Gly Pro Ser Glu Ala Arg Asn Thr Asp Thr Leu Asp	
865	870 875
aag ctt cgg cag gcg gtg aca gag ctg tca gag cag gtg ctg cag atg	2690
Lys Leu Arg Gln Ala Val Thr Glu Leu Ser Glu Gln Val Leu Gln Met	
880	885 890 895
cgg gaa gga ctg cag tca ctt cgc cag gct gtg cag ctt gtc ctg gcg	2738
Arg Glu Gly Leu Gln Ser Leu Arg Gln Ala Val Gln Leu Val Leu Ala	
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ccc cac agg gag ggt ccg tgc cct cgg gca tcg gga gag ggg ccg tgc	2786
Pro His Arg Glu Gly Pro Cys Pro Arg Ala Ser Gly Glu Gly Pro Cys	
915	920 925
cca gcc agc acc tcc ggg ctt ctg cag cct ctg tgt gtg gac act ggg	2834
Pro Ala Ser Thr Ser Gly Leu Leu Gln Pro Leu Cys Val Asp Thr Gly	
930	935 940
gca tcc tcc tac tgc ctg cag ccc cca gct ggc tct gtc ttg agt ggg	2882
Ala Ser Ser Tyr Cys Leu Gln Pro Pro Ala Gly Ser Val Leu Ser Gly	
945	950 955
act tgg ccc cac cct cgt ccg ggg cct cct ccc ctc atg gca ccc tgg	2930
Thr Trp Pro His Pro Arg Pro Gly Pro Pro Pro Leu Met Ala Pro Trp	
960	965 970 975
ccc tgg ggt ccc cca gcg tct cag agc tcc ccc tgg cct cga gcc aca	2978
Pro Trp Gly Pro Pro Ala Ser Gln Ser Ser Pro Trp Pro Arg Ala Thr	
980	985 990
gct ttc tgg acc tcc acc tca gac tca gag ccc cct gcc tca gga gac	3026
Ala Phe Trp Thr Ser Thr Ser Asp Ser Glu Pro Pro Ala Ser Gly Asp	
995	1000 1005
ctc tgc tct gag ccc agc acc cct gcc tcc cct cct cct tct gag gaa	3074
Leu Cys Ser Glu Pro Ser Thr Pro Ala Ser Pro Pro Pro Ser Glu Glu	
1010	1015 1020
ggg gct agg act ggg ccc gca gag cct gtg agc cag gct gag gct acc	3122

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Gly Ala Arg Thr Gly Pro Ala Glu Pro Val Ser Gln Ala Glu Ala Thr  
1025 1030 1035

agc act gga gag ccc cca cca ggg tca ggg ggc ctg gcc ttg ccc tgg 3170  
Ser Thr Gly Glu Pro Pro Gly Ser Gly Gly Leu Ala Leu Pro Trp  
1040 1045 1050 1055

gac ccc cac agc ctg gag atg gtg ctt att ggc tgc cat ggc tct ggc 3218  
Asp Pro His Ser Leu Glu Met Val Leu Ile Gly Cys His Gly Ser Gly  
1060 1065 1070

aca gtc cag tgg acc cag gaa gaa ggc aca ggg gtc tga gtaccagccc 3267  
Thr Val Gln Trp Thr Gln Glu Glu Gly Thr Gly Val  
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<212> PRT

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Asn Ala Gln Val Ala Gly Leu Phe Pro Val Val Tyr Cys Ser Asp Gly  
35 40 45

Phe Cys Asp Leu Thr Gly Phe Ser Arg Ala Glu Val Met Gln Arg Gly  
50 55 60

Cys Ala Cys Ser Phe Leu Tyr Gly Pro Asp Thr Ser Glu Leu Val Arg  
65 70 75 80

Gln Gln Ile Arg Lys Ala Leu Asp Glu His Lys Glu Phe Lys Ala Glu  
85 90 95

Leu Ile Leu Tyr Arg Lys Ser Gly Leu Pro Phe Trp Cys Leu Leu Asp  
100 105 110

Val Ile Pro Ile Lys Asn Glu Lys Gly Glu Val Ala Leu Phe Leu Val  
115 120 125

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Ser His Lys Asp Ile Ser Glu Thr Lys Asn Arg Gly Gly Pro Asp Arg  
130 135 140

Trp Lys Glu Thr Gly Gly Gly Arg Arg Arg Tyr Gly Arg Ala Arg Ser  
145 150 155 160

Lys Gly Phe Asn Ala Asn Arg Arg Arg Ser Arg Ala Val Leu Tyr His  
165 170 175

Leu Ser Gly His Leu Gln Lys Gln Pro Lys Gly Lys His Lys Leu Asn  
180 185 190

Lys Gly Val Phe Gly Glu Lys Pro Asn Leu Pro Glu Tyr Lys Val Ala  
195 200 205

Ala Ile Arg Lys Ser Pro Phe Ile Leu Leu His Cys Gly Ala Leu Arg  
210 215 220

Ala Thr Trp Asp Gly Phe Ile Leu Leu Ala Thr Leu Tyr Val Ala Val  
225 230 235 240

Thr Val Pro Tyr Ser Val Cys Val Ser Thr Ala Arg Glu Pro Ser Ala  
245 250 255

Ala Arg Gly Pro Pro Ser Val Cys Asp Leu Ala Val Glu Val Leu Phe  
260 265 270

Ile Leu Asp Ile Val Leu Asn Phe Arg Thr Thr Phe Val Ser Lys Ser  
275 280 285

Gly Gln Val Val Phe Ala Pro Lys Ser Ile Cys Leu His Tyr Val Thr  
290 295 300

Thr Trp Phe Leu Leu Asp Val Ile Ala Ala Leu Pro Phe Asp Leu Leu  
305 310 315 320

His Ala Phe Lys Val Asn Val Tyr Phe Gly Ala His Leu Leu Lys Thr  
325 330 335

Val Arg Leu Leu Arg Leu Leu Arg Leu Leu Pro Arg Leu Asp Arg Tyr  
340 345 350

Ser Gln Tyr Ser Ala Val Val Leu Thr Leu Leu Met Ala Val Phe Ala  
355 360 365

Leu Leu Ala His Trp Val Ala Cys Val Trp Phe Tyr Ile Gly Gln Arg  
370 375 380



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Glu Ile Glu Ser Ser Glu Ser Glu Leu Pro Glu Ile Gly Trp Leu Gln  
385 390 395 400

Glu Leu Ala Arg Arg Leu Glu Thr Pro Tyr Tyr Leu Val Gly Arg Arg  
405 410 415

Pro Ala Gly Gly Asn Ser Ser Gly Gln Ser Asp Asn Cys Ser Ser Ser  
420 425 430

Ser Glu Ala Asn Gly Thr Gly Leu Glu Leu Leu Gly Gly Pro Ser Leu  
435 440 445

Arg Ser Ala Tyr Ile Thr Ser Leu Tyr Phe Ala Leu Ser Ser Leu Thr  
450 455 460

Ser Val Gly Phe Gly Asn Val Ser Ala Asn Thr Asp Thr Glu Lys Ile  
465 470 475 480

Phe Ser Ile Cys Thr Met Leu Ile Gly Ala Leu Met His Ala Val Val  
485 490 495

Phe Gly Asn Val Thr Ala Ile Ile Gln Arg Met Tyr Ala Arg Arg Phe  
500 505 510

Leu Tyr His Ser Arg Thr Arg Asp Leu Arg Asp Tyr Ile Arg Ile His  
515 520 525

Arg Ile Pro Lys Pro Leu Lys Gln Arg Met Leu Glu Tyr Phe Gln Ala  
530 535 540

Thr Trp Ala Val Asn Asn Gly Ile Asp Thr Thr Glu Leu Leu Gln Ser  
545 550 555 560

Leu Pro Asp Glu Leu Arg Ala Asp Ile Ala Met His Leu His Lys Glu  
565 570 575

Val Leu Gln Leu Pro Leu Phe Glu Ala Ala Ser Arg Gly Cys Leu Arg  
580 585 590

Ala Leu Ser Leu Ala Leu Arg Pro Ala Phe Cys Thr Pro Gly Glu Tyr  
595 600 605

Leu Ile His Gln Gly Asp Ala Leu Gln Ala Leu Tyr Phe Val Cys Ser  
610 615 620

Gly Ser Met Glu Val Leu Lys Gly Gly Thr Val Leu Ala Ile Leu Gly  
625 630 635 640

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Lys Gly Asp Leu Ile Gly Cys Glu Leu Pro Arg Arg Glu Gln Val Val  
645 650 655

Lys Ala Asn Ala Asp Val Lys Gly Leu Thr Tyr Cys Val Leu Gln Cys  
660 665 670

Leu Gln Leu Ala Gly Leu His Asp Ser Leu Ala Leu Tyr Pro Glu Phe  
675 680 685

Ala Pro Arg Phe Ser Arg Gly Leu Arg Gly Glu Leu Ser Tyr Asn Leu  
690 695 700

Gly Ala Gly Gly Gly Ser Ala Glu Val Asp Thr Ser Ser Leu Ser Gly  
705 710 715 720

Asp Asn Thr Leu Met Ser Thr Leu Glu Glu Lys Glu Thr Asp Gly Glu  
725 730 735

Gln Gly Pro Thr Val Ser Pro Ala Pro Ala Asp Glu Pro Ser Ser Pro  
740 745 750

Leu Leu Ser Pro Gly Cys Thr Ser Ser Ser Ser Ala Ala Lys Leu Leu  
755 760 765

Ser Pro Arg Arg Thr Ala Pro Arg Pro Arg Leu Gly Gly Arg Gly Arg  
770 775 780

Pro Gly Arg Ala Gly Ala Leu Lys Ala Glu Ala Gly Pro Ser Ala Pro  
785 790 795 800

Pro Arg Ala Leu Glu Gly Leu Arg Leu Pro Pro Met Pro Trp Asn Val  
805 810 815

Pro Pro Asp Leu Ser Pro Arg Val Val Asp Gly Ile Glu Asp Gly Cys  
820 825 830

Gly Ser Asp Gln Pro Lys Phe Ser Phe Arg Val Gly Gln Ser Gly Pro  
835 840 845

Glu Cys Ser Ser Ser Pro Ser Pro Gly Pro Glu Ser Gly Leu Leu Thr  
850 855 860

Val Pro His Gly Pro Ser Glu Ala Arg Asn Thr Asp Thr Leu Asp Lys  
865 870 875 880

Leu Arg Gln Ala Val Thr Glu Leu Ser Glu Gln Val Leu Gln Met Arg  
885 890 895

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Glu Gly Leu Gln Ser Leu Arg Gln Ala Val Gln Leu Val Leu Ala Pro  
900 905 910

His Arg Glu Gly Pro Cys Pro Arg Ala Ser Gly Glu Gly Pro Cys Pro  
915 920 925

Ala Ser Thr Ser Gly Leu Leu Gln Pro Leu Cys Val Asp Thr Gly Ala  
930 935 940

Ser Ser Tyr Cys Leu Gln Pro Pro Ala Gly Ser Val Leu Ser Gly Thr  
945 950 955 960

Trp Pro His Pro Arg Pro Gly Pro Pro Pro Leu Met Ala Pro Trp Pro  
965 970 975

Trp Gly Pro Pro Ala Ser Gln Ser Ser Pro Trp Pro Arg Ala Thr Ala  
980 985 990

Phe Trp Thr Ser Thr Ser Asp Ser Glu Pro Pro Ala Ser Gly Asp Leu  
995 1000 1005

Cys Ser Glu Pro Ser Thr Pro Ala Ser Pro Pro Pro Ser Glu Glu Gly  
1010 1015 1020

Ala Arg Thr Gly Pro Ala Glu Pro Val Ser Gln Ala Glu Ala Thr Ser  
1025 1030 1035 1040

Thr Gly Glu Pro Pro Pro Gly Ser Gly Gly Leu Ala Leu Pro Trp Asp  
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Pro His Ser Leu Glu Met Val Leu Ile Gly Cys His Gly Ser Gly Thr  
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gac acc atc gcc acc cgt ttt gac gga acg cac agc aac ttc ctg ctg 96  
Asp Thr Ile Ala Thr Arg Phe Asp Gly Thr His Ser Asn Phe Leu Leu  
20 25 30  
gcc aac gca cag ggc aca cgg ggc ttt ccc atc gtc tac tgc tcc gac 144  
Ala Asn Ala Gln Gly Thr Arg Gly Phe Pro Ile Val Tyr Cys Ser Asp  
35 40 45  
ggc ttc tgc gag ctc aca ggc tac ggt cgc acc gag gtc atg cag aag 192  
Gly Phe Cys Glu Leu Thr Gly Tyr Gly Arg Thr Glu Val Met Gln Lys  
50 55 60  
acc tgc agc tgc cgt ttc ctc tac ggc cca gag acc agt gag cca gcc 240  
Thr Cys Ser Cys Arg Phe Leu Tyr Gly Pro Glu Thr Ser Glu Pro Ala  
65 70 75  
ctg cag cgt ctg cac aaa gcc ctg gag ggc cac cag gag cac cgg gct 288  
Leu Gln Arg Leu His Lys Ala Leu Glu Gly His Gln Glu His Arg Ala  
80 85 90 95  
gaa atc tgc ttc tac cgc aag gat ggc tca gcc ttt tgg tgc ctc ctg 336

Glu Ile Cys Phe Tyr Arg Lys Asp Gly Ser Ala Phe Trp Cys Leu Leu  
 100 105 110

gac atg atg ccc atc aag aat gag atg ggg gag gtc gtg ctg ttc ctc 384  
 Asp Met Met Pro Ile Lys Asn Glu Met Gly Glu Val Val Leu Phe Leu  
 115 120 125

ttt tcc ttc aag gat atc act cag agt gga agc cca gga ctt ggc ccc 432  
 Phe Ser Phe Lys Asp Ile Thr Gln Ser Gly Ser Pro Gly Leu Gly Pro  
 130 135 140

caa gga ggc cgc ggg gac agt aat cac gaa aac tcc ctt ggt aga agg 480  
 Gln Gly Gly Arg Gly Asp Ser Asn His Glu Asn Ser Leu Gly Arg Arg  
 145 150 155

gga gcc acc tgg aaa ttt cgg tct gcc aga aga cgg agc cgt act gtc 528  
 Gly Ala Thr Trp Lys Phe Arg Ser Ala Arg Arg Arg Ser Arg Thr Val  
 160 165 170 175

cta cac cga ctg acc ggc cac ttt ggc cgc cgg ggc cag gga ggc atg 576  
 Leu His Arg Leu Thr Gly His Phe Gly Arg Arg Gly Gln Gly Gly Met  
 180 185 190

aag gcc aat aat aac gtg ttt gag cca aag cca tca gtg ccc gag tac 624  
 Lys Ala Asn Asn Asn Val Phe Glu Pro Lys Pro Ser Val Pro Glu Tyr  
 195 200 205

aag gtg gcc tcc gtg ggg ggg tct cgc tgc ctc ctc ctc cac tac agc 672  
 Lys Val Ala Ser Val Gly Gly Ser Arg Cys Leu Leu Leu His Tyr Ser  
 210 215 220

gtc tcc aag gcc atc tgg gac ggc ctt atc ctc ctt gcc acc ttc tac 720  
 Val Ser Lys Ala Ile Trp Asp Gly Leu Ile Leu Leu Ala Thr Phe Tyr  
 225 230 235

gtt gcg gtc acc gtc ccc tac aat gtc tgt ttc tcg ggt gac gat gac 768  
 Val Ala Val Thr Val Pro Tyr Asn Val Cys Phe Ser Gly Asp Asp Asp  
 240 245 250 255

acc ccc atc act tcg cga cac acc ctt gtc agc gac atc gcc gtg gaa 816  
 Thr Pro Ile Thr Ser Arg His Thr Leu Val Ser Asp Ile Ala Val Glu  
 260 265 270

atg ctc ttc atc cta gat atc atc ctg aac ttc cgc acc acc tat gtg 864  
 Met Leu Phe Ile Leu Asp Ile Ile Leu Asn Phe Arg Thr Thr Tyr Val  
 275 280 285

tcc cag tcc ggc cag gta atc tct gct cct cgt tcc att ggc ctc cac 912

Ser Gln Ser Gly Gln Val Ile Ser Ala Pro Arg Ser Ile Gly Leu His  
 290 295 300

tac ctg gcc acc tgg ttc ttc atc gac ctt att gct gct ctg ccc ttt 960  
 Tyr Leu Ala Thr Trp Phe Phe Ile Asp Leu Ile Ala Ala Leu Pro Phe  
 305 310 315

gac ctg ctt tac atc ttc aac atc acc gtg acc tcg ctg gtg cac cta 1008  
 Asp Leu Leu Tyr Ile Phe Asn Ile Thr Val Thr Ser Leu Val His Leu  
 320 325 330 335

ctg aag aca gtg cgg ctg ttg cgg ctg ctg cgg ctg ctg cag aag ctg 1056  
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 Glu Arg Tyr Ser Gln Cys Ser Ala Val Val Leu Thr Leu Leu Met Ser  
 355 360 365

gtc ttt gcg ctc ctt gcc cac tgg atg gcc tgc atc tgg tat gtc atc 1152  
 Val Phe Ala Leu Leu Ala His Trp Met Ala Cys Ile Trp Tyr Val Ile  
 370 375 380

ggg cgc cgg gag atg gag gcc aat gac ccg ctg ctc tgg gac att ggc 1200  
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 385 390 395

tgg ttg cat gag ttg ggc aag cgt ctg gag gtg ccc tat gtc aat ggc 1248  
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 Ser Val Gly Gly Pro Ser Arg Arg Ser Ala Tyr Ile Ala Ala Leu Tyr  
 420 425 430

ttc act cta agc agc ctc acc agt gtg ggc ttt ggc aac gtg tgt gcc 1344  
 Phe Thr Leu Ser Ser Leu Thr Ser Val Gly Phe Gly Asn Val Cys Ala  
 435 440 445

aac acc gac gcg gag aag atc ttc tcc atc tgc acg atg ctc ata ggc 1392  
 Asn Thr Asp Ala Glu Lys Ile Phe Ser Ile Cys Thr Met Leu Ile Gly  
 450 455 460

gcc ctg atg cac gct gtg gtg ttc ggg aac gtg aca gcc atc atc cag 1440  
 Ala Leu Met His Ala Val Val Phe Gly Asn Val Thr Ala Ile Ile Gln  
 465 470 475

cgc atg tac tcg cgc cgc tcg ctc tac cac agc cgc atg aag gac ctc 1488

Arg Met Tyr Ser Arg Arg Ser Leu Tyr His Ser Arg Met Lys Asp Leu	
480	495
aag gac ttc atc cgt gtg cac cgc ctg ccg cgg ccg ctc aag cag cgc	1536
Lys Asp Phe Ile Arg Val His Arg Leu Pro Arg Pro Leu Lys Gln Arg	
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atg ctc gaa tac ttc cag acc acg tgg gcc gtc aac agc ggc atc gac	1584
Met Leu Glu Tyr Phe Gln Thr Thr Trp Ala Val Asn Ser Gly Ile Asp	
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gcc aac gag tta ctg cgt gac ttc cca gac gag ctg aga gct gac att	1632
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Ala Ser Arg Gly Cys Leu Arg Ala Leu Ser Leu His Ile Lys Thr Ser	
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Phe Cys Ala Pro Gly Glu Tyr Leu Leu Arg Arg Gly Asp Ala Leu Gln	
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Ala His Tyr Tyr Val Cys Ser Gly Ser Leu Glu Val Leu Arg Asp Asn	
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Met Val Leu Ala Ile Leu Gly Lys Gly Asp Leu Ile Gly Ala Asp Ile	
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Pro Glu Pro Gly Gln Glu Pro Gly Leu Gly Ala Asp Pro Asn Phe Val	
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Leu Lys Thr Ser Ala Asp Val Lys Ala Leu Thr Tyr Cys Gly Leu Gln	
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Gln Leu Ser Ser Arg Gly Leu Ala Glu Val Leu Arg Leu Tyr Pro Glu	
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Pro Arg Leu Ser Gln Pro Arg Ser Glu Ser Leu Gly Ser Ser Ser Asp	
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Lys Thr Leu Pro Ser Ile Thr Glu Ala Glu Ser Gly Ala Glu Pro Gly	
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Gln Arg Leu His Lys Ala Leu Glu Gly His Gln Glu His Arg Ala Glu  
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Ile Cys Phe Tyr Arg Lys Asp Gly Ser Ala Phe Trp Cys Leu Leu Asp  
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His Arg Leu Thr Gly His Phe Gly Arg Arg Gly Gln Gly Gly Met Lys  
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Ala Val Thr Val Pro Tyr Asn Val Cys Phe Ser Gly Asp Asp Asp Thr  
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Gln Ser Gly Gln Val Ile Ser Ala Pro Arg Ser Ile Gly Leu His Tyr  
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Lys Thr Val Arg Leu Leu Arg Leu Leu Arg Leu Leu Gln Lys Leu Glu  
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Phe Ala Leu Leu Ala His Trp Met Ala Cys Ile Trp Tyr Val Ile Gly  
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Arg Arg Glu Met Glu Ala Asn Asp Pro Leu Leu Trp Asp Ile Gly Trp  
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Leu His Glu Leu Gly Lys Arg Leu Glu Val Pro Tyr Val Asn Gly Ser  
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Val Gly Gly Pro Ser Arg Arg Ser Ala Tyr Ile Ala Ala Leu Tyr Phe  
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Thr Leu Ser Ser Leu Thr Ser Val Gly Phe Gly Asn Val Cys Ala Asn  
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725 730 735

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Phe Ser Ala Leu Val Ser Ser Pro Ser Leu Ser Pro Ser Leu Ser Pro  
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785 790 795 800

Cys Ser Ala Ala Trp Lys Pro Pro Gln Leu Leu Ile Pro Pro Leu Gly  
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835 840 845

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Leu Ser Arg Glu Leu Arg His Ile Met Gly Leu Leu Gln Ala Arg Leu  
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